velocity carries them through the bank of tubes and the hole in the baffle. In fact it is very probable that the failure of the baffle at this point was due to the continual impinging upon it of the hot gases. The chilled current of gas flowing down around the tubes of the boiler would also tend to force the hot gases, flowing out from below the arch, against the baffle. After passing through the break in the baffle a portion of the hot gases will tend to rise into the upper portion of the first and second pass, while the balance will be carried down by the current of cooler gases flowing down the second bank of tubes and will pass under the second baffle. They will then immediately rise to the outlet, passing up the space between the second baffle and the third bank of tubes, then crossing the tube bank near the top, under the rear drum.

The explanation of this action is very simple. Anyone who has sat by a window on a cold day knows that the air chilled by contact with the window drops to the floor, and that the velocity of the air current is appreciable, although the difference in temperature between the inside of the room and outside of the building is comparatively small, say, from 20° to 40° C. The same phenomenon, except that the current of air rises, may be witnessed in the vicinity of any radiator in a steam-heated building, while the hot-air furnace installed in many homes depends upon convection currents. If currents can be established at such low temperature heads in a room at ordinary living temperature, it is only logical that similar currents will be established where temperature differences of several hundreds of degrees exist.

A phenomenon similar to the deflection of the current of heated gases flowing through the broken baffle by cooler downward

currents can be observed by using an electric fan to break up and distribute the current of hot air rising fronra radiator. The mere fact that a certain amount of gas is being drawn off at one point of the setting and a corresponding quantity of gas or air admitted at another part will not affect the local convection currents any more than the drawing off and admission of air into a room affects the current of cold air at the windows and of the heated air at the radiators.

Unfortunately we have all been hypontized by the idea that any current of gas passing through a series of enclosures sweeps uniformly through the full cross-section of all the passages or